Association of Applied Geochemists

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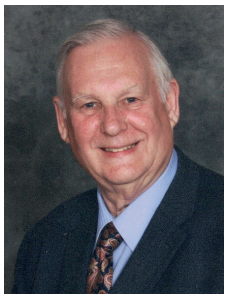
ROBERT G. GARRETT – HONORARY FELLOW



The Association of Applied Geochemists (AAG) is pleased to announce that Honorary Fellowship in the association has been awarded to Robert G. Garrett of the Geological Survey of Canada (GSC), Ottawa (emeritus), in recognition of his distinguished contributions to applied geochemistry during a career spanning more than 50 years. Honorary Fellows of the association are granted this exceptional recognition for their contributions in generating and disseminating applied geochemical research at a high level and for their long-standing commitment to the association.

Robert Garrett has greatly influenced applied geochemistry during his 38 years as a research scientist and 15 years as an emeritus scientist (still active) at the GSC. Over his career he has authored or co-authored over 150 published papers, articles, and government reports, a textbook, and 5 book chapters, including 2 chapters in the *Handbook of Exploration Geochemistry*, volume 2, "Statistics and Data Analysis in Geochemical Prospecting".

Robert is best known for his investigations and developments of statistical and mathematical methods for the interpretation of regional geochemical data and their application to mineral exploration. His research and resulting publications cover a wide range of topics, including the design of geochemical surveys, management of geochemical data, geochemistry of organic lake sediments, drainage geochemistry, metals in the environment, and influence of geology on agricultural soils and crops. Robert was one of the very first to recognize the importance and power of exploratory data analysis in geochemistry. He wrote the so-termed RGR package as part of the R Open Source statistical computing and graphics package to provide easy access to many powerful data analysis techniques and to assist applied geochemists in interpreting data.

Robert has made consistent contributions to applied geochemistry in Canada and many other countries around the world. His GSC studies focussed on regional geochemistry, contributing to the design and implementation of Canada's National Geochemical Reconnaissance Program in the 1970s and the development of improved geochemical exploration methods and procedures for interpreting geochemical data. Internationally, he participated in Canadian International Development Agency exploration geochemistry projects in Brazil, Malaysia, and Jamaica. His geochemical interests involved international collaborations through COGEODATA, International Geoscience Programme (IGCP) Projects 98, 259 and 360, the International Union of Geological Sciences' (IUGS) Global Geochemical Baselines working group, and the IUGS' Commission on Global Geochemical Baselines. He undertook regional geochemical studies in the Canadian Prairies to support diamond exploration, which led to the collaboration with soil and agricultural scientists in Canada and the USA concerning the phytoavailability of trace elements and their accumulation in food grains.

He contributed expertise to heavy metals and to the North America Free Trade Agreement meetings concerning policy initiatives for metals in the environment, Canadian Environmental Protection A risk assessment and regulatory related matters, the Federal Toxic Substances Management Plan, Metals in the Environment (MITE), Toxic Substances Research Initiative (TSRI), and the North American Geochemical Soil Landscapes project with the US Geological Survey, together with other US and Canadian federal departments.

Since retiring in 2005, Robert has continued to contribute to the GSC's scientific program as an emeritus scientist and to mentor younger scientists. Robert has also continued his ongoing development of the RGR package. The most recent update was released 21 May 2020.

Robert has been providing support and guidance to the AAG since it was formed in 1970, in the early years as a councillor, as vice president and as president and a member of the Bibliography Committee and the Awards & Medals Committee. In later years to the present, he further supported the AAG by serving on the editorial boards of both of the association's flagship journals, *Journal of Geochemical Exploration* and *Geochemistry: Exploration, Environment, Analysis*, and writing contributions for the newsletter *EXPLORE*.

M. Beth McClenaghan (Ontario, Canada)
Gwendy E.M. Hall (Ontario, Canada)
Clemens Reimann (Königstetten, Austria)

RECENT ARTICLES PUBLISHED IN *EXPLORE*

The following abstract is for an article that appeared in issue 190 (February 2021) of the *EXPLORE* newsletter.

"Geochemical Variables as Causality Co-Factors in Diseases of Unknown Aetiology (DUA) in Africa"

T.C. Davies[1,2]

The focus of the article is on the magnitude of the role of geoenvironmental factors: in particular, the entry of trace elements/metals/metalloids into biological systems and their involvement in humoral and cellular immune responses, representing potentially toxic agents with possible implications as co-factors for certain diseases of unknown aetiology (DUA). However, it is important to state that some of these elements (micronutrients) play vital roles as co-factors for some essential enzymes and antioxidant molecules that confer protection against disease. It is the amount of trace element, metal, or metalloid that is taken up and its accumulation in human tissues that decisively determines whether the exerted effects are toxic or beneficial. Several case descriptions of DUA that are common in Africa are presented in tabular form to illustrate our knowledge on how trace element/metal/metalloid interactions in the immune system may be implicated as causality co-factors in these diseases. A call is made for the urgent need for more research on the sources and dynamics of entry of trace elements/metals/metalloids into food chains and for a demonstration of how the use of these results, because they can aid precise aetiological characterisation of DUA, as well as serve as the basis for harmonising and updating current legislative regulations regarding the concentrations of trace elements/metals/metalloids in food and in drinking water.

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